BULL. BOT. SURV. INDIA
Vol. 5, No. 1 : pp. 37-38, 1963

NOTES ON SYSTEMATICS, CYTOLOGY AND CULTURE OF *PAPHIOPEDILUM VENUSTUM* (Lindl.) Pfitz.

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ABSTRACT

This paper presents a short note on systematics and cytology on *Paphiopedilum venustum* (Lindl.) Pfitz. (= *Cypripedium venustum* Lindl.) where the chromosomes are found to be 2n = 40 in the tapetal cells. The cultural notes are also given based on the observation made on the plants growing in the National Orchidarium, Shillong.

For about two centuries, all "Slipper orchids" were referred to the genus *Cypripedium* Linn., and Hooker (1890) and King & Prantling (1898) described the Indian species of the genus under the name *Cypripedium*. But later studies in the systematics of this group led to the recognition that the tribe *Cypripedieae* (Dressler and Dodson, 1960) includes four distinct groups of species, which are now generally assigned to four genera (Holttum, 1957 ; Dressler & Dodson, 1960). They are *Cypripedium, Selenipedilum, Phragmopedilum* and *Paphiopedilum,* of which the first two are European in distribution. All our Indian species belong to the genus *Paphiopedilum* which is distinguished from its nearest allied American genus *Phragmopedilum* by its one-chambered ovary, in contrast with the three-chambered ovary of the latter genus.

Three species of *Paphiopedilum* are now under cultivation in the National Orchidarium under the auspices of the Eastern Circle of Botanical Survey of India, Shillong. Of these, cytology of *Paphiopedilum venustum* (Lindl.) Pfitz. only has been studied. A note on the important morphological features of the species and its cytology together with diagrams of its habit and dissection of floral parts (Fig. 1 a, b, c, e) presented here for easy recognition of the species both in the herbarium and in the field.

HABIT

The plant is terrestrial ; leaves elliptic-oblong, dark green, marbled with pale green above and dull purple beneath ; dorsal sepal broadly ovate, whitish with dark green stripes, acute ; petals linear-oblong, green and purple, subspathulate, spreading, bearded, sparsely warted, warts blackish ; lip subcylindric, yellowish green, flush with pink and with green reticulations ; staminode semicircular with notched end ; ovary one-celled. (Fig. 1 d).

CYTOLOGY

Flower buds were fixed in acetic : alcohol (1 : 2) and squashed with acetocarmine and made permanent following the usual technique. Instead of meiosis, however, chromosome counts were made in the tapetal cells which showed 2n=40. (cf. Panigrahi, 1962). Analysis of the karyotype shows the presence of two groups of chromosomes—a group of about nine pairs of long chromosomes and another of eleven pairs of short chromosomes. Of the first group, one pair is by far the longest with distinct constriction at the position of the submedian centromere, and shares this feature with 2-3 more pairs of the long-chromosome group. One diagram from a photomicrograph (×Ca. 450) together with its karyotypic idiogram, is illustrated (Fig. 2 a & b).

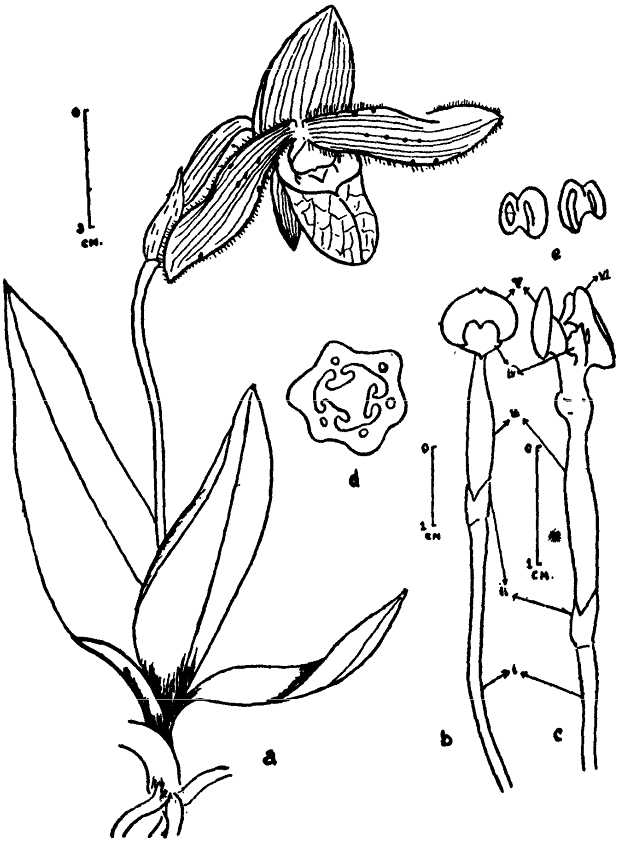

Fig. 1. *Paphiopedilum venustum* (Lindl.) Pfitz. a. Habit ; b&c. Front and side view ; i. peduncle ; ii. bract ; iii. Ovary ; iv. Column ; v. Staminode ; vi. Rostellum ; d. T. S. of Ovary (×Ca. 5·4) ; e. anthers (×Ca. 2.7).

Since 2n=20 has been reported for *Cypripedium cordigerum* D. Don (Mehra & Bawa, 1962), **P.** (=*Cypripedium*) **venustum** (Lindl.) Pfitz. appears to be a tetraploid species.

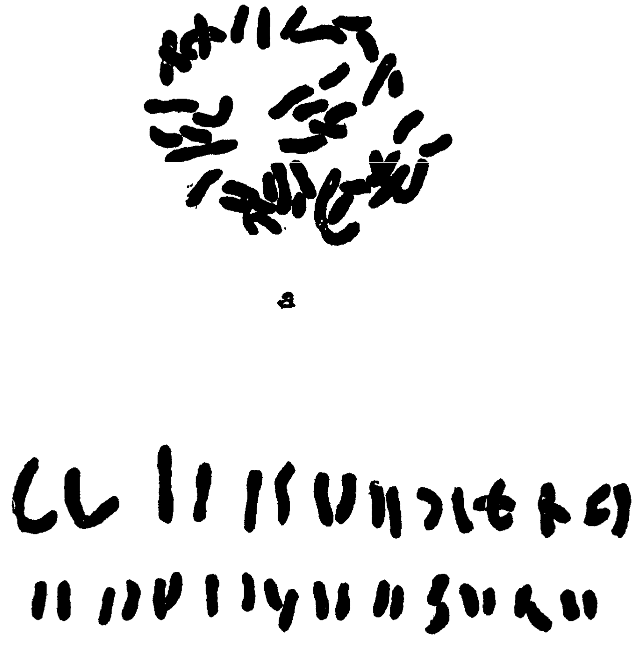

FIG. 2. a. Somatic Chromosomes in the tapetal cells, 2n=40 of *P. venustum* (Lindl.) Pfitz. b. idiogram of the karyotype.

CULTURAL NOTES

The species grows wild on shaded rock covered with peat on hill slopes of Pynursla (1200 m.), Cherrapunji (1200 m.) and their surrounding areas in the Khasi and Jaintia Hills. When cultivated in earthen-ware pots containing brown lateritic soil, the species, as anticipated, did not thrive well. But, on transfer to well-drained pots containing a mixture of leaf-mould, sand and powdered charcoal in proportion of 2:1:1, all the three species of *Paphiopedilum* showed vigorous growth and development when kept under shade in the National Orchidarium, Shillong (1500 m.) and yielded a large number of flowers in the months of November and December.

ACKNOWLEDGEMENTS

My thanks are due to Dr. G. Panigrahi, Regional Botanist, Botanical Survey of India, Eastern Circle, Shillong for guidance and supervision. Thanks are also due to Shri S. C. Mustafi, Orchidarium Keeper, for providing data for the cultural requirements of **P. venustum** (Lindl.) Pfitz.

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